

## Immunity

Resistance - physical + chemical protection.

Bacteria - minute, one-cell organisms.

- 1) spiral - spirillum
- 2) circular - ~~coccy~~ coccus
- 3) rod - bacillus

Infection - not always communicable.

Communicable - from one person to another in an active state.

Contagious - communicable.

Infection through

- lesions + wounds in skin.
- eye, mouth, genital openings.
- protected by mucous membrane.

Food - water, meats, canned foods, milk, etc.

Nose - diseases of respiratory tract.

- scarlet fever
- diphtheria
- T. B.
- pneumonia.

Attack

severity

- severity of germ
- environment + climate
- susceptibility of person.
- number + no. of germs.
- state of health.

Action of germs

- cause trouble
- produce products of disease (toxin)
- skin disease.



Natural immunity - individual & racial.

Acquired .. - vaccination  
                                  innoculation  
                                  - having disease

- antibodies developed by disease & remain in the body.

Antibodies - chemical agents in blood

Passive immunization - serum from horse's plasma.

Killable - measles (maybe)

Weakened (attenuated) germs

- produce weak disease.

Vaccination - injection of dead or alive bacteria.

Innoculation - injection of antibodies  
(horse's serum)

Phagocyte - white <sup>cells</sup> ~~organisms~~ surround & eat bacteria.

Metchnikov's theory.

Anti-bodies - Ehrlich's theory.

Toxin - bacterial poison (organic)

- causes formation of anti-bodies.

- destroyed by heat.

- tetanus (lockjaw)

Anti-toxin is anti-body serum.



## Multiplication of bacteria

- transverse splitting of cell body
- Environment bad - special cells produced
- reproduce vegetative bacteria.
  - exist under adverse conditions.
  - called "spores."
  - exist in bacilli & spirilla
  - form at end & middle of bacterial cell.
  - formation - elimination of water from protoplasm - shrinkage &
  - heavy resistant cell wall.
  - later resolves into vegetative bacteria.
- ## Distribution of bacteria.

Antiseptic - chemical agent, prevents growth of bacteria.

germicides - kills bacteria



## Leadership.

### Leader.

Good judgement. Justice.  
Fearlessness. Confidence.  
Understanding - group & individual.  
Initiative.

### Understanding -

Listen + look.

Children discipline themselves.

→ Energy.

Unselfishness.

Patience.

Tact.

Cheerfulness.

Persistence.

### When Leaders best.



## Physiology of Exercise

Muscles - contractile.

Involuntary - organs. (trachea, stomach)

Voluntary - att. to skeleton.

Cardiac - heart. (imvol. + striated) (red, pink or a whole)

Muscles contract on nervous stimulation.  
Contract + relax subseq.

Muscles - thin - abdominal speed  
thick - scapula weight  
- different functions as to different  
shape + size.

Exercise 1. effect on muscles  
2. effect on rest of body.

1. consumption of glycogen - liberation of energy + heat - then waste.
2. liberation of wastes.  
circulation increased - respiration.



## Exercise

Speed - sprinting  
Endurance - running  
Alertness - fencing  
Strength - athletics  
Skill - gymnastics

Speed - rise in bodily functions.

- should be gradual.

- rapid intense demands on body.

Endurance - tones body equally + develops.

Strength - localized body.

Asthenic - type

- long narrow chest, long slender muscles.

- not always strong.

Pyknic - stocky, athletic type.

- greater strength in isolated muscles.

Conception of Physical Ed.

- activities must not be specialized.

- children must have big muscle activity.



## Equilibrium

- Through activity - balance + co-ord.
- nerve paths strengthened.
  - cerebellum + semi-circular canals of inner ear control equilibrium
  - nerves carry sensations to certain muscles.

## Cerebellum

- controls rhythmic & sustained activity

## Mechanics of shoulder girdle

- mobility - freedom

Reflex - staircase phenomena.

the fact - with strong stimulation the muscle cohort contract to its fullest extent.

## Primary effects of exercise

- 1) consumption of glycogen +  $O_2$ .
- 2) giving off  $CO_2$  +  $H_2O$  + lactic acid.
- 3) Producing heat + energy.

## Secondary effects

respiration  
heart.

circulation  
peristalsis

nerves  
muscles  
excretory

## Harmful exercise

Athletic heart  
Dilatation of heart.



## Chap. I.

## Growth + Physical Development

### Concept of P.E.

Exercise - improve ability + efficiency of body + its organs.

Aim - complete development of human body + its spiritual + mental powers.

- class activities accordingly
- development of body
- power of resistance
- vital processes

Play-age - pre-school yrs.

6-8 yrs. - games + play forms

+ - bodily control by definite

Exercise - achieve correct posture  
skill  
suppleness.

After adolescence - exercises voluntary.  
specialized exercise.  
(running, track + field)

### Types.

1) Asthenic (leptosomes)

slender, tall, narrow shoulders.  
flat chest, weak musculature.

2) Pykinic (muscular).

Type formed at completion of growth period.

1. running, jumping, throwing.

2. apparatus, swimming, rowing.

### Growth of sexes

1) height increases 3 times from birth.

2) weight

" 19-21 " " "



- 3) brain increases  $3\frac{1}{2}$  - 4 times in weight complete mat. by 9 yrs.  
~~eye reaches normal size first~~ 4-6 yrs.
- 4) heart increases 12.5 times from birth (men)  
 10.8 (women.)

increase during adolescence 14-16 yrs  
 15-17 yr - biggest increase.

- 5) height & weight increase 14-15 yr.  
 also internal organs.

Egomaniac type - high school type (asthenic)

- 6) body surface area increases 7.4 times to 15<sup>th</sup> year.

length of infant - size of head & trunk  
 $\frac{1}{4}$  of total length

● Egotistic - slender build with short trunk  
 long legs

compact - short legs & long trunk.  
 (affiliated men.)

Chest increases more in all-round athletes.  
Growth affected by secretions - hormones.

- 1) thyroid - growth & brain.
- 2) pituitary - sex tissue
- 3) abdominal - glycogen from carb.
- 4) adrenal - heart growth.
- 5) thymus - goes at adolescence.

1<sup>st</sup> yr. & beginning of adolescence.  
 - girls' chests & muscular development.

● Adolescence - size of heart doubled.  
 - capacity of lungs "  
 - thorax flattens  
 - weight & height increased



## Chap. 2.

## Anatomicophysiological Conception of Bodily Exercise.

### Exercise determines - I.

- muscles involved.
- movements in joints
- changes in center of gravity.

### All mechanical processes.

- ### II.
- power of body (muscles)
  - influence on functions of body.  
(circulation, respiration, metabolism)

### Maintaining equilibrium.

- movement of one part of body  
produces counteracting movements elsewhere.

### Shoulder girdle.

- open posteriorly.

### Investigation of movements.

- curves - duration of a single motor process.
- extent of motion - amt. of power used.

### by movies

### chromophotos.

- single presentation  
of many movements.  
one by one.





The **Margaret Eaton School Digital Collection** is a not-for-profit resource created in 2014-2015 to assist scholars, researchers, educators, and students to discover the Margaret Eaton School archives housed in the Peter Turkstra Library at Redeemer University College. Copyright of the digital images is the property of Redeemer University College, Ancaster, Canada and the images may not be copied or emailed to multiple sites without the copyright holder's express written permission. However, users may print, download, or email digital images for individual non-commercial use. To learn more about this project or to search the digital collection, go to <http://libguides.redeemer.ca/mes>.